

CLAIMS:

1. A method for displaying a sub-picture over a background picture on a display, the method comprising:

determining a visual characteristic of at least a portion of the background picture (510, 610, 710, 810);

determining a visual characteristic of at least a portion of the sub-picture (520, 620, 720, 730, 820, 840, 920, 930);

determining whether a difference in the visual characteristics exceeds a minimum threshold;

displaying the sub-picture over the background picture with a frame (622, 922, 932) when the difference exceeds the minimum threshold; and

displaying the sub-picture over the background picture without a frame when the difference does not exceed the minimum threshold.

2. The method of claim 1, wherein:

the visual characteristics comprise at least one of color levels and greyscale levels.

3. The method of claim 1, wherein:

the frame has a visual characteristic that contrasts with the visual characteristics of the at least a portion of the background picture and the at least a portion of the sub-picture.

4. The method of claim 1, further comprising:

estimating the visual characteristic of the at least a portion of the background picture.

5. The method of claim 1, further comprising:

measuring the visual characteristic of the at least a portion of the background picture.

6. The method of claim 1, further comprising:

prior to displaying the sub-picture over the background picture, determining whether the difference is between the minimum threshold and a maximum threshold;

wherein the sub-picture is displayed over the background picture with a frame when the difference is between the minimum threshold and a maximum threshold.

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7. A display apparatus for displaying a sub-picture over a background picture, the display apparatus comprising:

a control (100) for determining visual characteristics of at least a portion of the background picture (510, 610, 710, 810) and at least a portion of the sub-picture (520, 620, 720, 730, 820, 840, 920, 930), and determining whether a difference in the visual characteristics exceeds a minimum threshold; and

a display (300, 400) responsive to the control for displaying the sub-picture over the background picture with a frame (622, 922, 932) when the difference exceeds the minimum threshold, and for displaying the sub-picture over the background picture without a frame when the difference does not exceed the minimum threshold.

8. The display apparatus of claim 7, further comprising:

a memory (120) storing data indicating the visual characteristics of the at least a portion of the background picture;

wherein the control is responsive to the data stored in the memory for determining whether the difference exceeds the minimum threshold.

9. The display apparatus of claim 7, wherein:

the visual characteristics comprise at least one of color levels and greyscale levels.

10. The display apparatus of claim 7, wherein:

the frame has a visual characteristic that contrasts with the visual characteristics of the at least a portion of the background picture and the at least a portion of the sub-picture.

11. The display apparatus of claim 7, wherein:

the control estimates the visual characteristic of the at least a portion of the background picture.

12. The display apparatus of claim 7, further comprising:

photo-sensors (1250, 1350) for measuring the visual characteristic of the at least a portion of the background picture;

wherein the control is responsive to the photo-sensors for determining the visual characteristic of the at least a portion of the background picture.

13. The display apparatus of claim 7, wherein:

the display comprises an electrophoretic display.

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14. The display apparatus of claim 7, wherein:
the display apparatus comprises a bi-stable display.

15. The display apparatus of claim 14, wherein:
the control determines whether the difference is between the minimum threshold and a maximum threshold; and
the bi-stable display is responsive to the control for displaying the sub-picture over the background picture with a frame when the difference is between the minimum threshold and a maximum threshold.

16. The display apparatus of claim 7, wherein:
the display apparatus comprises an electronic reading device.

17. The display apparatus of claim 7, wherein:
the display apparatus comprises a sign.

18. The display apparatus of claim 17, wherein the sub-picture (520, 620, 720, 730, 820, 840, 920, 930) comprises a message or image which changes rapidly.

19. A program storage device tangibly embodying a program of instructions executable by a machine to perform a method for updating images on an display, the method comprising:

determining a visual characteristic of at least a portion of the background picture (510, 610, 710, 810);

determining a visual characteristic of at least a portion of the sub-picture (520, 620, 720, 730, 820, 840, 920, 930);

determining whether a difference in the visual characteristics exceeds a minimum threshold;

displaying the sub-picture over the background picture with a frame (622, 922, 932) when the difference exceeds the minimum threshold; and

displaying the sub-picture over the background picture without a frame when the difference does not exceed the minimum threshold.